

Polymorphism in the *FGFBP1* gene is associated with performance, carcass and meat quality traits in broilers

Felício, AM¹; Boschiero, C¹; Silva, NA¹; Andrade, JLF¹; Balieiro, JC²; Michelan Filho, T³; Ledur, MC⁴; Coutinho, LL¹

¹Laboratório de Biotecnologia Animal - ESALQ/USP, Piracicaba - Brasil. ²Departamento de Ciências Básicas - FZEA/USP, Pirassununga - Brasil. ³Aviagen do Brasil, Rio Claro - Brasil. ⁴Embrapa Suínos e Aves, Concórdia - Brasil
amfelici@esalq.usp.br

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Fibroblast Growth Factor-Binding Proteins (FGFBPs) plays an important role in the signaling complex of the Fibroblast Growth Factors (FGFs) during embryonic development of chicken. *FGFBP1* gene (Fibroblast Growth Factor-Binding Proteins 1) is located on GGA4 where a QTL was mapped for weight at 35 and 41 days between markers *MCW0240-LEI0063*. In chicken, 34 SNPs were described in the *FGFBP1* gene, but there are no studies of associations of SNPs in this gene with traits of interest for the poultry industry. The objective of this study was to associate a polymorphism in the *FGFBP1* gene with performance, carcass, and meat quality traits in broilers. Twelve chickens (F1) were sequenced from the experimental population Embrapa Swine and Poultry and three SNPs were identified in the *FGFBP1* gene. One SNP was chosen to genotype 75 broilers from the Aviagen Company by RT-PCR with TaqMan[®] probes. The traits evaluated were: body weight at 38 days (BW38), ultrasound records of pectoral muscle (US), body weight at slaughter (BW42), eviscerated body weight (EVBW), breast meat weight (BRW), leg weight (LW), initial pH measure (pHi), final pH measure (pHf), levels of lightness, redness and yellowness (L*, a* and b*), water losses by weep, drip, and shrink (WL, DL and SL), shear force (SF), and diameter of the breast muscle fibers (DIAM). Analyses of variance were evaluated using mixed models, and the means least square for each polymorphism genotype were estimated. The estimated allele frequencies for the SNP were f(C)= 0.56 and f(T)= 0.44, and the genotype frequencies obtained were: C/C= 19, T/C= 35 and T/T= 11. The polymorphism was associated with EVBW and LW (P= 0.04), and DIAM (P= 0.03), and an additive effect was observed. Animals with T/T genotype had higher EVBW (+180 g) and LW (+64 g) than those with the C/C genotype. As for the DIAM trait, animals with the T/T genotype had muscle fibers with diameter 5.26 µm smaller than C/C animals. The selection of animals with smaller muscle fiber diameter can improve chicken meat quality, due to a positive genetic correlation between meat water losses and muscle fiber diameter reported in previous studies. The SNP evaluated in this study may be used as a marker in breeding programs for the improvement of chicken meat quality. Financial Support: CNPq